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Usage of Chili Peppers Antimicrobial Activity in Organic Salad Dressings against Food Spoilage Yeasts and Molds

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Abstract

One of the primary purposes for people to consume salad is to gain more nutrients, especially vitamins and minerals that would lose in cooking. While according to a 2009 research on microbiological spoilage of fruits and vegetables, many fresh cut fruits and vegetables present an ideal circumstance for various microorganisms to survive and grow.[1] Scientists have found that the pain and heated extracts from chili pepper exhibit varying degrees of inhibition against some bacteria and molds that cause food spoilage.[2] Therefore, we assume that chili pepper antimicrobial activity can be inactive or inhibit the growth of food spoilage yeasts, so that it could be applied in organic salad dressing to delay the food spoilage.

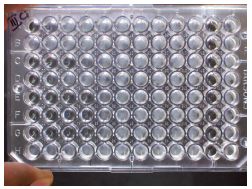
Background

Food spoilage means the original nutritional value, texture, flavor of the food are damaged; the food becomes harmful to people and unsuitable to eat. There are several ways cause food spoilage: catalyze by the enzyme, oxidation, and microorganisms. The factors include bacteria, mold, yeast, moisture, temperature and chemical reaction. With the development of food processing and packaging technologies during the last decades, the storage time for food has been extended a lot. While quality sensory change and short shelf life caused by microbiology spoilage for fresh-cut fruits and vegetables is still a big problem. If successful, this project would provide a basis for future studies on the application of antimicrobial use in food processing industry.

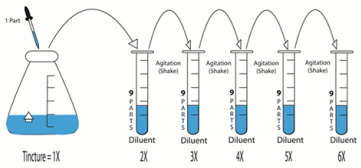
Materials & Methods

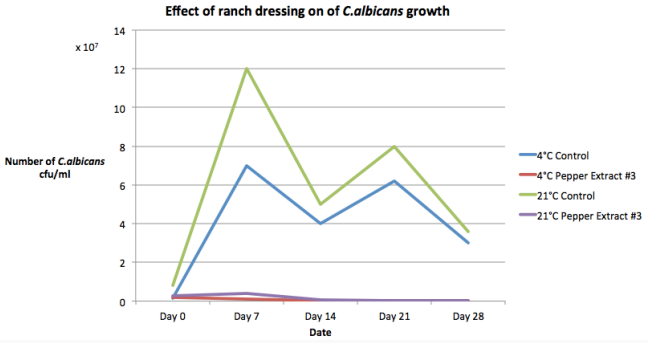
1. Tested the capability of three peppers and pepper leaves on inhibiting inoculum growth by using minimum inhibitory concentration
2. Picked the sample working most efficient on inhibiting microbial growth
3. Added this sample to reduce-fat ranch dressing to test its ability on inhibiting growth of *Candida albicans* through a 28 day period through sampling every seven days at both room and refrigerator temperature
4. Repeat step 3 on control groups
5. Collect data and analysis

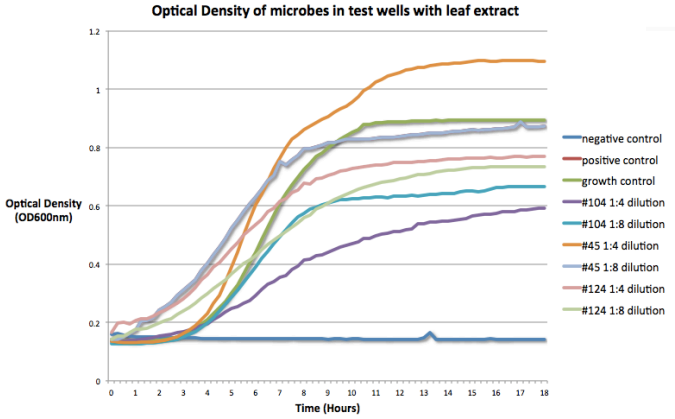
Minimum Inhibitory Concentration

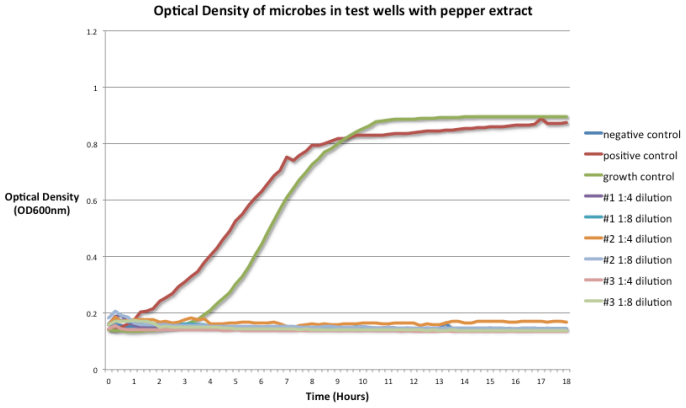


Dilution









Results

1. Optical Density of Microbes in test wells showed that pepper leaf extracts had no effect on growth inhibition, where as chili pepper extracts did inhibit growth of *C.albicans*
2. Ranch Dressing samples with chili pepper extract inhibited growth of *C.albicans* at both temperatures through the 28 day study

Conclusions

1. Chili pepper extracts work more efficiently in preventing food spoilage than pepper leave extract at both room and refrigerator temperatures
2. Ranch dressing containing pepper extract could efficiently delayed food spoilage.

Reference

1. Barth M, Hankinson TR, Zhuang H, Breidt F. Microbiology spoilage of fruits and vegetables. *Microbiological Spoilage of Fruits and Vegetables. Compendium of the microbiology spoilage of foods and beverages food microbiology and food safety*. 2009. Sep. 135-183.
2. Cichewicz RH, Thorpe PA. et al. The antimicrobial properties of chile peppers (Capsicum species) and their use in Mayan medicine. *Journal of Ethnopharmacology*. 1996. Jun;52(2):61-70.

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